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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/698,464 | 11/03/2003 | Thorald Horst Bergmann | | 3479 |

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Thorald Bergmann
Adalbert-Stifter-Str. 8
D-82418 Murnau
D-82418 Murnau, D-82418
GERMANY

| EXAMINER | |
|---|---|
| VAN ROY, TOD THOMAS | |
| **ART UNIT** | **PAPER NUMBER** |
| 2828 | |

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/698,464 | BERGMANN ET AL. | |
| | Examiner | Art Unit | |
| | Tod T. Van Roy | 2828 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 November 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *15-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 October 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Drawings*

The drawings were received on 10/11/2005. These drawings are accepted.

### *Specification*

The amending of the specification is noted, and the previous objection is withdrawn.

### *Response to Amendment*

The examiner acknowledges the cancellation of claims 1-14 and the addition of claims 15-27.

### *Response to Arguments*

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15-25 are rejected under 35 U.S.C. 102(b) as being anticipated by Stingl et al. (WO 02/28305, rejection references are directed towards the English translation of this document – US PGPUB 2004/0102767).

With respect to claim 15, Stingl discloses a Pockels cell driver circuit comprising: a first circuit node (SK1) (fig.5 first point left side of cell #17) to be connected with a first connector of the Pockels cell (CP) and a second circuit node (SK2) (fig.5 first point right side of cell #17) to be connected with a second connector of the Pockels cell (CP), wherein the first circuit node (SK1) is connected with a first potential via a first switch (S1) (switch #48 to ground or low potential), and the second circuit node (SK2) is connected with the first potential via a second switch (S2) (switch #49 to ground or low potential), wherein both said circuit nodes (SKI, SK2) are connected with a second potential (HV) via a recharging resistor (R1, R2) (nodes connect to potential U1 via resistors #54, 55), respectively, and only one (SK2) of the said circuit nodes (SKI, SK2) or both said circuit nodes (SKI, SK2) are connected with the second potential (HV) via a further switch (S2B) (both nodes connected by further switches #52, 53), respectively.

With respect to claim 16, Stingl discloses a Pockels cell driver circuit comprising: a first circuit node (SK1) (fig.5 first point left side of cell #17) to be connected with a first connector of the Pockels cell (CP) and a second circuit node (SK2) to be connected with a second connector of the Pockels cell (CP) (fig.5 first point right side of cell #17), wherein the first circuit node (SK1) is connected with a first potential via a first switch (S1) (switch #48 to ground or low potential), and the second circuit node (SK2) is connected with the first potential via a second switch (S2) (switch #49 to ground or low potential), wherein one of the said circuit nodes (SKI, SK2) is connected with a second potential (HV) via a recharging resistor (left node connected with second potential U1 via resistor #54), and the other one of the said circuit nodes (SKI, SK2) is connected

with the second potential (HV) via a further switch (right node connected to second potential U1 via switch #53).

With respect to claim 17, Stingl discloses a Pockels cell driver circuit comprising: a first circuit node (SK1) to be connected with a first connector of the Pockels cell (CP) (fig.5 first point left side of cell #17) and a second circuit node (SK2) to be connected with a second connector of the Pockels cell (CP) (fig.5 first point right side of cell #17), wherein the first circuit node (SK1) is connected with a first potential via a first switch (S1) (switch #48 to ground or low potential), and the second circuit node (SK2) is connected with the first potential via a second switch (S2) (switch #49 to ground or low potential), wherein both said circuit nodes (SKI, SK2) are connected with a second potential (HV) via a switch (S1B, S2B) (both nodes connected to a second potential U1, left node via switch #52, right node via switch #53), respectively.

With respect to claim 18, Stingl discloses the Pockels cell driver as outlined in claim 15, and further discloses low voltage control signals that individually control each of the switches of the circuit ([0047], low power input voltage to switch controller branched off before being amplified to a high power signal).

With respect to claim 19, Stingl discloses the Pockels cell driver as outlined in claim 15, and further discloses only two control signals, on/off, which control all the switches such that one of the signals, on, induces voltage to be applied to the cell ([0052]), and the other, off, induces the removal of voltage from the cell ([0051]) (definition of on/off signal arbitrary to whether switch is considered on/off or signal is considered on/off, this on/off feature could also be considered an inherent feature of an

electronic switch as being used here, sense the only signal sent to any switch is always on or off).

With respect to claim 20, Stingl discloses the Pockels cell driver as outlined in claim 15, and further discloses the use of the Pockels cell and circuit in a system (fig.5).

With respect to claim 21, Stingl discloses the Pockels cell driver as outlined in claim 20, and further discloses applying the Pockels cell in a pulsed laser system for the optical switching of laser light ([0010]).

With respect to claim 22, Stingl discloses the pulse laser system as outlined in the rejection to claim 21, wherein the system comprises a pulsed laser source (fig.2 #12/13 plus #16 creating pulses) having a laser resonator (fig.2 #8), wherein the Pockels cell is arranged internally or externally to the laser resonator (fig.2 #17).

With respect to claim 23, Stingl discloses the pulse laser system as outlined in the rejection to claim 21, wherein the system comprises a pulsed laser source (fig.2 #12/13 plus #16 creating pulses) and an optical amplifier (fig.2 #13, [0030]).

With respect to claims 24-25, Stingl discloses the pulse laser system as outlined in the rejection to claim 20, wherein the system comprises a pulsed laser source (fig.2 #12/13 plus #16 creating pulses) and an optical amplifier (fig.2 #13, [0030]), and a Pockels cell arranged in the amplifier (fig.2 #17 arranged inside of amplifying resonator cavity between mirrors #14 and #11), and a laser resonator (fig.2 #8).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stingl in view of Zhang et al. (US 2001/0038074).

With respect to claim 26, Stingl teaches the Pockels cell driver as outlined in claim 21, but does not teach the use of the Pockels cell driver in a pump/probe method. Zhang teaches a Pockels cell and control wherein an optical excitation pulse and a delayed optical monitoring pulse is directed onto a medium whereas the signal induced by the delayed monitoring pulse is measured as a function of delay between the two pulses, whereas the pulse sequence of pump- and probe-pulse and the delay from one to another is determined by the Pockels cell and the driver of that Pockels cell (crystal using Pockels effect [0003], description of function [0008-10], with delay timing [0012]). It would have been obvious to one of ordinary skill in the art at the time of the invention

to utilize the Pockels cell and driver of Stingl with the system of Zhang in order to detect terahertz pulses and form images of the objects from which the pulses are reflected (Zhang, abs.).

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stingl in view of Opower (US 5361275).

With respect to claim 14, Stingl teaches the Pockels cell driver as outlined in claim 21, but does not teach the use of the Pockels cell driver in a materials processing method. Opower teaches a Pockels cell and control whereby a first laser pulse is directed onto the surface of the material creating a plasma whereby after some delay a further number of pulses is directed onto the plasma above the surface of the material, whereby the first laser pulse and the further number of laser pulses is determined by the Pockels cell and its driver (Pockels cell and control - col.1 lines 54-64, col.2 lines 10-14; pulses and plasma – col.2 lines 39-53). It would have been obvious to one of ordinary skill in the art at the time of the invention to utilize the Pockels cell and driver of Stingl with the system of Opower to remove material from a target during a production of layers for the functional structure of a semiconductor component (Opower, col.3 lines 52-60).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tod T. Van Roy whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TVR

MINSUN O. HARVEY
PRIMARY EXAMINER